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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,065	11/02/2001	Danish Ali	GB 000160	4841

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EXAMINER
WONG, LINDA

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/003,065	ALI, DANISH
	Examiner	Art Unit	
	Linda Wong	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _16 December 2005_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-8_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3,7 and 9_ is/are rejected.

7)☒ Claim(s) _4-6 and 8_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-9 have been considered but are

moot in view of the new ground(s) of rejection due to the amended claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Rademacher (US Patent No.: 6570918) in view of El-Tarhuni et al (US Patent No.:

6201828) further in view Choi et al (US Patent No.: 20030214926).

    a. **Claim 1**, Racemacher discloses a rake receiver comprising an analog to digital

converter, a PN code generator comprising combining the PN code, combining

the outputs from the rake receiver fingers and recovering the data after

combining. Although Rademacher does not disclose a variable delay,

correlating the delayed signal with the PN code generated and a filtered PN

code, El-Tarhuni et al discloses a rake receiver receiving an input signal, a

signal processing means comprising a variable delay, PN code generator,

correlating the delayed signal with the PN code generated. (Fig. 3, labels

124,102,106,104, and 108) It would be obvious to one skilled in the art to combine use the processing of input signal found in the rake receiver disclosed by El-Tarhuni et al to "determine the transmission delay of a spread-spectrum signal to an accuracy of at least within one-eighth of a PN chip duration at low cost an with low complexity." (Col. 2, lines 36-39) Although Rademacher and El-Tarhuni does not teach a filtered PN code, Choi et al discloses a CDMA communication system comprising PN code generators for producing PN codes and filtering the PN code using an interpolating filter, which produces a multibit PN code. (page 3, paragraph [0087]). It would be obvious to one skilled in the art to use a PN code generator filtered by an interpolation filter to remove harmonic components.

b. **Claim 9**, Rademacher discloses a filtering means or a threshold device for filtering the signal path output from the combining means. (Fig. 3, labels 32 and 34)

3. **Claims 2, 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rademacher (US Patent No.: 6570918) in view of El-Tarhuni et al (US Patent No.: 6201828), further in view of Choi et al (US Patent No.: 20030214926) and further in view of Aue (US Publication No.: 20020051486)

a. **Claim 2**, El-Tarhuni et al discloses a signal deriving means coupled to the output of the code generation (Fig. 3, labels 124, 108,104 and 106) and to the variable delay means (Fig. 3, label 102), wherein the signal deriving means

derives an early-late timing error signal (Fig. 3, labels 108,104,106). The timing

error signal is used to adjust the variable delay (Fig. 3, output from labels

108,104 and 106 to input of label 122 and 102). Although El-Tarhuni does not

disclose multiplying the delayed signal with the complex conjugate of the on-

time correlation as shown in Fig. 1 and page 5, lines 23-29 of the Applicant's

specification, Aue discloses a rake receiver, comprising calculating the early-

late correlations and multiplying the complex conjugate of the on-time

correlation with a filtered or delayed input signal, wherein the multiplied output

is coupled to a combiner. (page 1, paragraph [0001], lines 4-9 and Fig. 9, labels

Rake-Finger 1-K and Combiner) It would be obvious to one skilled in the art to

incorporate a multiplier for multiplying the complex conjugate of the on-time

correlation to a delayed signal to generate "the receiving signal with the

greatest possible signal-to-noise ratio." (page 2, paragraph [0021]) Although

Aue does not explicitly state finding the complex conjugate of the amplitude and

phase, the complex conjugate inherently detects provides the conjugates for the

amplitude and phase of the received signal.

c. **Claim 3** inherits the limitation of a filtered PN code as recited in claim 1, but

claim 1 does not recite all the limitations of claim 4. El-Tarhuni et al discloses a

code generation means comprises early, on-time and late outputs (Fig. 3, labels

124, "-1/2", "0", and "+1/2") and a signal deriving means comprising a first,

second and third correlators (Fig. 3, labels 108,104,105), wherein the first input

to the correlators is the output from the variable delay means (Fig. 3, label 102

and output from label 102 to labels 108,104,106), and the second input is either

an early, on-time or late output from the code generation means (Fig. 3, labels

"-1/2", "0", and "+1/2") and compute offset means having inputs to all the

correlators but computing the offset between the early and late correlations.

(Fig. 3, outputs from labels 110,112, and 114, 116 and Col. 5, lines 36-57)

Although El-Tarhuni et al does not disclose a correlator for outputting a

correlation between the complex conjugate of the on-time correlation and the

delayed signal from the variable delay, Aue discloses multiplying or correlating

the complex conjugate of the on-time signal with a delayed signal. (page 1,

paragraph [0001], lines 4-9 and Fig. 9, labels Rake-Finger 1-K and Combiner)

It would be obvious to one skilled in the art to incorporate a multiplier for

multiplying the complex conjugate of the on-time correlation to a delayed signal

to generate "the receiving signal with the greatest possible signal-to-noise

ratio." (page 2, paragraph [0021]) Although Aue does not explicitly state finding

the complex conjugate of the amplitude and phase, the complex conjugate

inherently detects provides the conjugates for the amplitude and phase of the

received signal.

4. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rademacher (US Patent No.: 6570918) in view of El-Tarhuni et al (US Patent No.:

6201828), further in view of Choi et al (US Publication No.: 20030214926), further in

view of Aue (US Publication No.: 20020051486) and further in view of Bultan et al

(US Publication No.: 20040057506).

    a. **Claim 7**, Although Rademacher, El-Tarhuni et al, Choi et al, and Aue fail to

    teach correlators including integrate and dump stages, Bultan et al discloses a

    rake receiver comprising late, early and punctual signals, all correlated

    respectively with first, second and third correlators, wherein the correlators

    comprises integrate and dump stages. (Fig. 2, labels Late, Early, Punctual, all

    inputted in to correlators, and labels 12a, 12b and 21) It would be obvious to

    one skilled in the art to include integrate and dump stages after correlation to

    maintain the bandwidth and damping ratio of the loop regardless of changes

    with input signal power level. (page 1, paragraph [0008])

Allowable Subject Matter

5. **Claims 4-6, 8** is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

7. A shortened statutory period for reply to this final action is set to expire THREE

    MONTHS from the mailing date of this action. In the event a first reply is filed within

    TWO MONTHS of the mailing date of this final action and the advisory action is not

    mailed until after the end of the THREE-MONTH shortened statutory period, then

    the shortened statutory period will expire on the date the advisory action is mailed,

    and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the

    mailing date of the advisory action. In no event, however, will the statutory period

    for reply expire later than SIX MONTHS from the date of this final action.

        Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Linda Wong whose telephone number is 571-272-6044.
The examiner can normally be reached on 9-5.
        If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number
for the organization where this application or proceeding is assigned is 571-273-8300.
        Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see http://pair-direct.uspto.gov. Should
you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

Linda Wong

DAC HA
PRIMARY EXAMINER